UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/087,136	05/28/98	HORVITZ	H 01997/202002

KRISTINA BIEKER BRADY
CLARK & ELBING
176 FEDERAL STREET
BOSTON MA 02110

HM22/0912

EXAMINER	
CANELLA,K	
ART UNIT	**PAPER NUMBER**
1642	16

DATE MAILED: 09/12/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)

U.S. G.P.O. 1999 460-693

1- File Copy

Office Action Summary

Application No.	Applicant(s)
09/087,136	Horovitz et al
Examiner	**Group Art Unit**
Kar n Can lla	1642

☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3 months* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-33* is/are pending in the applicat

Of the above, claim(s) *2, 3, 8, 9, 19-24, and 26-33* is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1, 4-7, 10-18, and 25* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

1. Please note that the examiner assigned to your application in the PTO has changed.

Response to Amendment

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 7, 10, 16, 17, 18 and 25 are amended. Claim 3 is canceled. Claims 1, 4-7, 10-18 and 25 are under consideration.

Claim Rejections Maintained

4. Rejection of claims 1, 5, 7, 15 under 35 U.S.C. 102(b)as being anticipated by Accession number U00047 is maintained. Applicant argues that the NCBI database contains a listing of nine genes predicted from the ZK418 cosmid sequences and that cosmids containing the lin-37 nucleic acid sequence do not constitute proper prior art because the cosmid contains many contiguous gene sequences. This argument is not found persuasive. Claims 1 and 7 are drawn to "A substantially pure nucleic acid encoding a lin-37 polypeptide", and as such, read on a cosmid in that the cosmid has been isolated and purified beyond the genomic material found in a cell, and contains the gene for the lin 37 protein which encodes the lin-37 polypeptide. Claim 15 is drawn to a vector comprising the nucleic acid of claim 1, and as such, does not exclude other nucleic acids or genes. Claim 15 further states that the vector should be capable of directing expression of the peptide encoded by said DNA in a vector containing cell. This is directly evidenced by the instant inventors (Lu and Horovitz) in the June 1996 abstract wherein they state that both cosmid C48B6 and cosmid F31H1 were capable of rescuing the lin-37 Muv phenotype.

The rejection claims 1, 3, 5, 15 ,25 under 35 U.S.C. 102(a) as being anticipated by Lu and Horovitz (June 1996 meeting) is maintained. The rejection of claims 1, 3, and 5 under 35 U.S.C. 102(a) as being anticipated by Ceol and Horovitz (June 1996 meeting) is maintained. Rejection of claims 1,3,5,11,14-16 under 35 U.S.C. 102(a) as being anticipated by Lu and Horovitz (May 1997 meeting) is maintained. The rejection of claim 25 under 35 U.S.C. 102(a) as being anticipated by Ceol and Horovitz (May 1997 meeting) is maintained. Applicant argues that these

are not proper 102(a) rejections because Horovitz, Ceol and Lu are the instant inventors. This is not found persuasive. 35 U.S.C. 102(a) reads as follows:

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

"Others" is defined in terms of "inventive entity". In the instant application, the inventive entity consists of Horovitz, Ceol and Lu. In the prior art cited in the 102(a) rejections, none of the inventive entities consisted of Horovitz, Ceol and Lu. Therefore the prior art cited for the 102(a) rejection in Paper No:11 constitutes proper prior art.

New Rejections

5. 35 U.S.C. 101 reads as follows:

> "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

6. Claims 16 and 17 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims, as written, embrace natural cells within a body. The Supreme Court has ruled that the term 'manufacture' in 35 U.S.C. 101 means 'the production of articles for use from raw materials prepared by giving to these materials new forms, qualities, properties, or combinations whether by hand labor or by machinery.' [See *Diamond v. Chakrabarty*, 206 USPQ 193 (1980)]. The claims encompass the product as it occurs in nature.

7. Claims 1, 4-7, 10-18 and 25 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a specific and substantial utility.

The disclosed utilities for the nucleic acid encoding the lin-37 protein comprising the amino acid sequence of SEQ ID NO:1 and the nucleic acid sequence of SEQ ID NO:2 or nucleic acids having 50% or greater nucleic acid sequence identity to SEQ ID NO:2 or vectors and host cells comprising the nucleic acid encoding the amino acid sequence of SEQ ID NO:1. However, neither the specification nor any art of record teaches a function for the isolated nucleic acids of SEQ ID NO:2, or nucleic acids having 50% homology to SEQ ID NO:2 beyond the encoding of a SynMuv polypeptide. The specification does not teach a specific and substantial utility for the SynMuv polypeptides, does not teach a relationship to any specific diseases or establish a molecular mechanism or empirical association linking the SynMuv polypeptides to the etiology of any specific diseases. The asserted utilities for lin-37 are only speculative. The specification states on pg 19, lines 3-6, "Experiments which stem directly from this research include searches for mammalian homologues of the novel SynMuv genes. Such homologues may function in activating, enhancing or otherwise identifying the effect of tumor suppressors." This statement plainly discloses that the sequence of the lin-37 gene and gene product is only the beginning in the search for mammalian homologues and uses of the encoded protein. There is no evidence of record that there is any demonstrated real world use for the lin-37 protein obtained from C. Elegans. Therefore the asserted utilities are speculative, inviting the artisan to elaborate a functional use for the disclosed nucleic acids and the as of yet undisclosed nucleic acids of the putative mammalian homologues as well as a functional use for the mammalian counterparts.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

"The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention."

9. Claims 1, 4-7, 10-18 and 25 are rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by a well established utility for the reasons set forth in the rejection under 35 USC 101 above, one skilled in the art clearly would not know how to use the claimed invention.

10. In the event that Applicants might be able to overcome the 35 USC 101 rejection and 35 U.S.C. 112 above, the specification would still be enabling only for claims limited to polynucleotides that encode SEQ ID NO:1, and the complete complement of said polynucleotide because the specification does not reasonably provide enablement for polynucleotides that encode polynucleotide variants having at least 50% polynucleotide sequence identity to SEQ ID NO:2. The specification does not enable any person skilled in the art to which it pertains or with which it is most nearly connected, to make/use the invention commensurate in scope with these claims. The specification discusses SEQ ID NO:2. The specification does not discuss departures from the nucleic acid sequence of SEQ ID NO:2. Polynucleotides that would not encode proteins that share either structural or functional properties with lin-37 are encompassed by claim 10. The specification fails to provide guidance for how one would use such polynucleotides. The specification provides insufficient guidance with regard to these issues and provides no working examples which would provide guidance to one skilled in the art on how to use the broadly claimed polynucleotides. For the above reasons, undue experimentation would be required to practice the claimed invention with a reasonable expectation of success.

11. Claims 1, 4-6, 10-18 and 25 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey

to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 16 and 18 are broadly drawn to polynucleotides encoding a polypeptide having 50% or greater sequence identity to SEQ ID NO:1. Claims 10 and 25 are broadly drawn to polynucleotides having about 50% or greater nucleotide sequence identity to SEQ ID NO:2. The specification discusses the cloning and sequencing of the lin-37 polypeptide obtained from C. Elegans. The specification does not discuss the nucleic acid sequences or cloning of any homologs or variants of the lin-37 polypeptide.

Vas-Cath Inc. V. Mahurkar, 19 USPQ2d 1111, clearly states that applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed (See page 1117). The specification does not clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed. (See Vas-Cath at page 1116).

Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 USC 112 is severable from its enablement provision (see page 115).

With the exception of the amino acid sequence of SEQ ID NO:1 and the nucleic acid sequence of SEQ ID NO:2, the skilled artisan cannot envision the detailed structure of the encompassed polynucleotides and polypeptides and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. The nucleic acid itself is required. See Fiers v. Revel, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Lts., 18 USPQ2d 1016.

Furthermore, In The Regents of the University of California v. Eli Lilly (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of nucleic acids by only

their functional activity does not provide an adequate written description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that 'An adequate written description of a DNA...requires a precise definition, such as by structure, formula, chemical name, or physical properties, not a merely a wish or plan for obtaining the claimed chemical invention.'

For more information about the written description requirement, please see The Interim Written Description Guidelines published in the June 15, 1998, Federal Register at Volume 63, Number 114, pages 32639-32645.

Therefore only an isolated DNA molecule comprising a DNA sequence consisting of SEQ ID NO:2 and complete compliment, but not the full breadth of the claims meets the written description provision of 35 USC 112, first paragraph.

12. Claims 1, 4-6, 10-18 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites "A cell which contains a substantially pure nucleic acid encoding a lin-37 polypeptide..." A nucleic acid cannot remain substantially pure after being introduced into a cellular milieu, therefore, the metes and bounds of this claim is unknown.

Claims 1, 16, 18 and 25 recite "Lin-37" and as such are indefinite in the use of a laboratory designation to as being indefinite in the use of a laboratory designation as the sole means of identifying the claimed polypeptides. The use of laboratory designations only to identify a particular polypeptide renders the claims indefinite because different laboratories may use differing laboratory designations to define the same polypeptide.

13. All other rejections and objections recited in Paper No: 11 are withdrawn.

Conclusion

14. Claims 1, 4-7, 10-18 and 25 are rejected.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Canella whose telephone number is (703) 308-8362. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Karen A. Canella, Ph.D.
Patent Examiner, Group 1642
September 4, 2000

ANTHONY C. CAPUTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600